

THE SOUTH AMERICAN FISH GENUS *ELACHOCHARAX*  
MYERS WITH A DESCRIPTION OF A NEW SPECIES  
(TELEOSTEI: CHARACIDAE)

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*Abstract.*—*Elachocharax geryi*, a new species of characid of the subfamily Characidiinae is described from Lago Paricatuba (60°30'W, 3°7'S), Rio Negro, Amazonas, Brazil and from Caño Muco, of the Río Vichada, Vichada, Colombia. The new species is closest to *Elachocharax pulcher* Myers (1975) which is redescribed from many specimens from the Amazon basin of Brazil and the Orinoco basin of Colombia and Venezuela. Previously *Elachocharax pulcher* was only known from near Caicara in the Orinoco basin of Venezuela. *Elachocharax georgiae* Géry (1965) is considered a synonym of *E. pulcher*. *Elachocharax* Myers (1927) is redefined and its possible relationships to the characidiin genera *Klausewitzia* Géry (1965) and *Geisleria* Géry (1971) are discussed. Although *Elachocharax* is probably phylogenetically close to these two genera more information is needed about certain of the species in both genera before hypotheses about the relationships of the three genera can be adequately tested.

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*Elachocharax* Myers (1927) was described from two specimens of a new species, *Elachocharax pulcher* Myers (1927), taken during 1925 from the Caño de Quiribana, near Caicara in the Orinoco River system of Venezuela. Myers (1927) allied *Elachocharax* with *Crenuchus* Günther, but suggested that *Elachocharax* may be related to *Characidium* Reinhardt. No other examples of *Elachocharax* were discovered and made known until Géry (1965) described an apparent new species, *Elachocharax georgiae*, from eight specimens collected during 1960 from Igarapé Prêto, State of Amazonas, Brazil, about 60 km downstream from Leticia, Colombia and Tabatinga, Brazil on the Rio Solimões. A related genus and species, *Geisleria junki* Géry (1971) was described from the Rio Novo, a tributary of the Rio Jamari about 45 km east of Porto Velho on the Rio Madeira, State of Guaporé, Brazil.

Géry (1971) hypothesized that *Geisleria* is more closely related to *Elachocharax* than to any other genus related to *Characidium*, but that the two genera differ from each other at the subfamily level. He proposed recognition of the three related subfamilies, the Characidiinae, the Elachocharacinae, and the Geisleriinae, all placed in the family Characidiidae, a characoid family of uncertain relationships but differing from the Crenuchidae of Géry (1963). Weitzman and Kanazawa (1976) have tentatively rejected the Elachocharacinae and Geisleriinae. Instead they adopted the

hypothesis that the characid genera *Klausewitzia* Géry, *Ammocryptocharax* Weitzman and Kanazawa, *Characidium*, *Jobertina* Boulenger, *Elachocharax* and *Geisleria* all belong to the Characidiinae, the affinities of which are uncertain at present.

*Characidium* has been thought allied with *Nannostomus* Günther and these two genera have been placed in what is the current equivalent of the Anostomidae by Eigenmann and Eigenmann (1891), following Steindachner (1876) who placed *Nannostomus* in relation to *Anostomus*. Regan (1911) presented osteological evidence that *Characidium* and *Nannostomus* were related and placed them in the Nannostominae, a subfamily he considered belonging to the Hemiodontidae. Weitzman (1964) reviewed the history of these placements in more detail than is presented here and found morphological evidence for placing *Nannostomus* in what is now the Lebiasinidae; see Weitzman and Cobb (1975). Weitzman (1964:143-144) found that the characters used by Regan (1911) to relate *Nannostomus* and *Characidium* were erroneously described by Regan and excluded *Characidium* and its relatives from the Lebiasinidae. Weitzman did not try to relate the Characidiinae to other characoids and this group has yet to receive any substantial morphological study to provide evidence for testing hypotheses of its possible phylogenetic relationships. Weitzman and Kanazawa (1976) note that they have this currently under study. The following account of *Elachocharax* is presented as another preliminary step towards the accomplishment of that investigation and one attempting to test hypotheses of the phylogenetic relationships of the genera of the Characidiinae.

The abbreviations below refer as follows: California Academy of Sciences (CAS); Indiana University Museum of Zoology (IUM), now as CAS; Field Museum of Natural History, Chicago (FMNH); Museo de Biología, Instituto de Zoología Tropical, Universidad Central de Venezuela (MBUCV-V); Museu de Zoologia da Universidade de São Paulo (MZUSP); Natur-Museum und Forschungs-Institut, Senckenberg, Frankfurt (SMF); Museum of Comparative Zoology, Harvard University (MCZ); and National Museum of Natural History, Washington, D.C. (USNM). The abbreviation EPA refers to the Expedição Permanente da Amazonia, a Brazilian program for studying Amazonian biota.

The following persons have loaned us specimens for examination. Heraldo A. Britski and Naercio A. Menezes (MZUSP), Jamie Thomerson, Southern Illinois University, Francisco Mago Leccia (MBUCV), William Eschmeyer (CAS), and Wolfgang Klausewitz (SMF). Marilyn Weitzman provided technical assistance and William L. Fink assisted in the preparation of photographs. Sara Fink prepared figures 5, 6, 7, 11, 12, and 13.

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### *Elachocharax* Myers

*Elachocharax* Myers, 1927:114, original description, type by monotypy  
*Elachocharax pulcher* Myers (1927).

*Elacocharax* Weitzman and Kanazawa 1976:328, misspelling for *Elachocharax*.

*Diagnosis.*—The following character will distinguish *Elachocharax* from all other genera of the Characidiinae: total number of dorsal-fin rays 17–22. Only *Jobertina* has member species with as many as 14 dorsal-fin rays.

Other characters of importance for recognizing *Elachocharax* are lateral line incomplete, perforated scales 5–9; scales in a lateral series 26–30; mouth terminal; teeth tricuspid or conic in premaxillary and outer row of dentary; all other teeth conic; teeth absent on maxillary and mesopterygoid; present on ectopterygoid; two rows of teeth on dentary; vertebrae 29–32, including Weberian apparatus and terminal half centrum; branchiostegal rays 4–5; adipose fin present or absent.

*Elachocharax* appears to be a genus of the Characidiinae as shown by Géry (1965 and 1971) and not related to the characid genus *Crenuchus* as thought possible by Myers (1927). There appear to be several species of small to pygmy members of the Characidiinae usually less than 25 mm in standard length (SL), having relatively short bodies, narrow elongate pectoral fins and perhaps with swimming habits somewhat like those of the North American pygmy sunfishes, *Elassoma*. See Weitzman and Kanazawa (1977) for observations on live specimens of one of these fishes.

Members of this group of tiny fishes are currently placed in the genera *Jobertina*, for example *J. eleotroides* Géry (several species of *Jobertina* are not miniature), *Klausewitzia*, *Elachocharax*, and the questionable *Geisleria*. The relationships, if any, among the members of this group are not understood and are in serious need of a penetrating evaluation. Evolutionary trends in most of these small fishes are often reductive and include simple reduction of orbital-bone ossification and loss of the adipose fin. Innovative trends which are not reductive or only partially reductive include the low-placed but narrow pectoral fins with relatively elongate rays, pectoral-fin rays which tend to be unbranched and few in number, an increase in



dorsal-fin ray number in some species, and development of relatively short, deep bodies. It is possible that these species of tiny fishes will eventually be recognized as a tribe, the Elachocharacini, representing one of the lines of evolution within the Characidiinae. If an analysis of the characters in these fishes leads to an unrefuted hypothesis of phylogenetic relationships among them, then a change in generic names of at least those currently placed in *Jobertina* will be necessary.

The relationships of *Geisleria* are here brought into further question than was considered by Géry (1971). He separated *Geisleria* from *Elachocharax* by two characters which he was able to observe with confidence and by two or three others about which he was uncertain of his observations. The first of the former characters was teeth tricuspid in *Elachocharax* and conic in *Geisleria*. As pointed out below, the teeth in the two closely related species of *Elachocharax* recognized here are a mixture of tricuspid and conic in one species, *E. pulcher*, and all conic in the second, *E. geryi*. In our view this character does not serve to distinguish fishes related to *Characidium* at the generic or the subfamily level. See Weitzman and Fink (in press) for a fuller discussion of the use of teeth as characters in characoid fishes. Another character Géry (1971) observed with confidence was the cranial fontanel absence in *Geisleria* and its presence in *Elachocharax*. We cannot comment about the presence or absence of a fontanel in *Geisleria junki* since specimens of this species are unavailable to us, but we would point out that in the pygmy or small fishes under discussion, the fontanels we have seen are restricted to the posterior part of the cranium and it may simply be that the fontanel's absence in *Geisleria* is a continuation of a well-developed reductive trend in the Characidiinae, not a remarkable difference "worthy" of subfamily or generic separation.

Géry (1971) notes in his table, p. 162, that *Geisleria* lacks orbital bones and that these are reduced in *Elachocharax*. In his text, p. 154, he appears uncertain that the orbital bones were totally absent in *Geisleria*. We too find orbital bones reduced in *Elachocharax* but suspect that at least the first orbital bone (circumorbital one) is present in *Geisleria*. Orbital bones posterior to the first would, in *Geisleria*, probably be reduced to poorly ossified laterosensory tubes as they are in *Elachocharax*. These structures are difficult to detect except in cleared and stained specimens and cannot be detected by gross dissection as being ossified in specimens left more than a few weeks in acid, unbuffered formalin. The rather heavily ossified first orbital should be detectable in unstained specimens. We would note that all these bones and even the vertebrae do not stain in specimens of *Elachocharax pulcher* from the Rio Branco, MZUSP 13236-13238, collected by T. Roberts in 1969 and maintained in unbuffered formalin for a few years. If a similar occurrence happened with the holotype and only known specimen of *G. junki* all of its orbital bones would be undetectable except by histological



examination. Of the other questionable characters used by Géry (1971), he was unsure of the absence of "pterygoid" teeth in *Geisleria*. Even if absent, this too is simply a continuation of a reductive trend found in *Elachocharax*. We note below that *E. geryi* has fewer ectopterygoid teeth than *E. pulcher* and we would not consider this loss in a third, related species, to warrant the generic separation of that species. Géry (1971) was uncertain as to whether his specimens of *Geisleria* had teeth on the maxillary on one side and he was certain of their absence on the other side. We are very sympathetic with his difficulties in this regard and would agree that only when specimens are cleared and stained with alizarin and the jaw bone is dried, is it possible to be certain of this character. In view of the closeness in other characters of *Geisleria* to *Elachocharax* we would be very surprised if maxillary teeth are present in *G. junki*. If present, this might indicate some kind of relationship with *Klausewitzia aphanes* Weitzman and Kanazawa which has such teeth, but far fewer dorsal-fin rays. Assuming that *Klausewitzia*, because of its maxillary teeth, can be considered a primitive genus of the pygmy "group" then if *Geisleria* is related to *Klausewitzia* as a sister group, the hypothesis that *Geisleria* evolved its high dorsal-fin ray count independent of *Elachocharax* might be worthy of consideration. We suspect, however, that the maxillary teeth of *Geisleria* are absent and that the synapomorphy of a high number of dorsal-fin rays in *Geisleria* and *Elachocharax* indicates a sister group status for these two genera. Until further information is available about *Geisleria*, its relationships must be considered enigmatic, although we consider it probable that *Geisleria* will be found either synonymous with or very closely related to *Elachocharax*.

*Elachocharax pulcher* Myers

Figs. 1-8, Tables 1 and 2

*Elachocharax pulcher* Myers, 1927:115, original description, Venezuela, Caño Quiribana near Caicara.—Mago Leccia, 1970:71, listed from Venezuela.—Géry, 1965:206, comparison, based on Myers (1927), with *E. georgiae*.

*Elachocharax georgiae* Géry, 1965:204, original description, Brazil, Igarapé Prêto, 60 km downstream from the border zone between Peru, Colombia, and Brazil.

*Material examined*.—See Fig. 8 for distribution map. Holotype, IUM (now at CAS) 17676, 16.0 mm SL, Venezuela, State of Bolivar, Caño de Quiribana, near Caicara (66°10'W, 70°39'N), May 1925, Carl Ternetz.—MBUCV-V-7295, (3), 16.9-17.3 mm SL, Venezuela, Territorio Federal de Amazonas, laguna near San Fernando de Atabapo (67°22'W, 4°4'N), 15 April 1973, F. Mago Leccia.—USNM 216921, (3), 15.6-16.9 mm SL (2

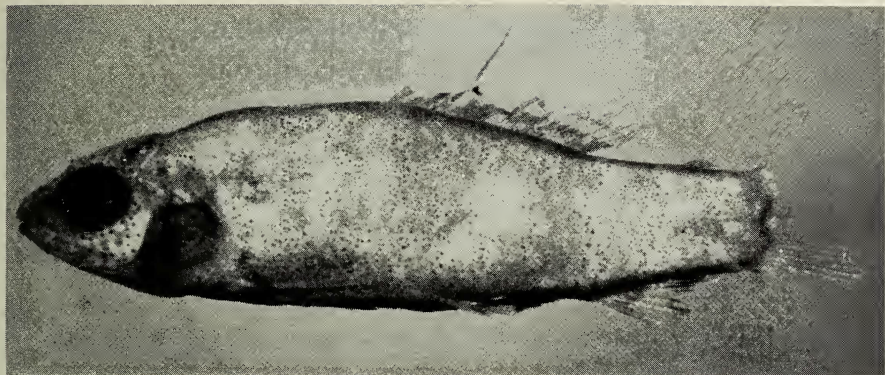


Fig. 1. *Elachocharax pulcher* Myers, CAS(IUM)17676, SL 16.5 mm, holotype, Caño de Quiribana near Caicara, Río Orinoco, Venezuela, May 1925.

specimens, 16.3 and 16.9 mm, cleared and stained), same locality data as MBUCV-V-7295.—USNM 216925, (3), 14.3–14.5 mm SL, Venezuela, Territorio Federal de Amazonas, Río Pacia Grande about 22 km from Puerto Ayacucho toward San Mariapo ( $67^{\circ}30'W$ ,  $5^{\circ}38'N$ ), 12 January 1975, J. E. Thomerson, D. C. Hicks, D. Taphorn and H. Lopez.—FMNH 83831, (1), 15.4 mm SL, Colombia, State of Meta, Caño Muco between  $70^{\circ}20'W$ ,  $4^{\circ}15'N$  and  $71^{\circ}58'W$ ,  $4^{\circ}98'N$ , tributary of Río Vichada, about 15 km west of Puerto Gaitan, J. E. Thomerson, D. C. Hicks and J. E. Vaques, 2 April 1974.—USNM 217558, (1), 16.0 mm SL, some locality data as FMNH 83831.—MZUSP 13242–13244, (3), 13.2–15.0 mm SL, Brazil, State of Amazonas, Rio Negro, São João, near Tapurucuara ( $65^{\circ}2'W$ ,  $0^{\circ}24'S$ ), from an igarapé of varzea with many fallen logs, P. Vanzolini, EPA, 24 October, 1972.—Following 4 lots have same locality data as MZUSP 13242: USNM



Fig. 2. *Elachocharax pulcher* Myers, USNM 217558, SL 16.0 mm, Caño Muco, Río Vichada, Colombia, April 1974.



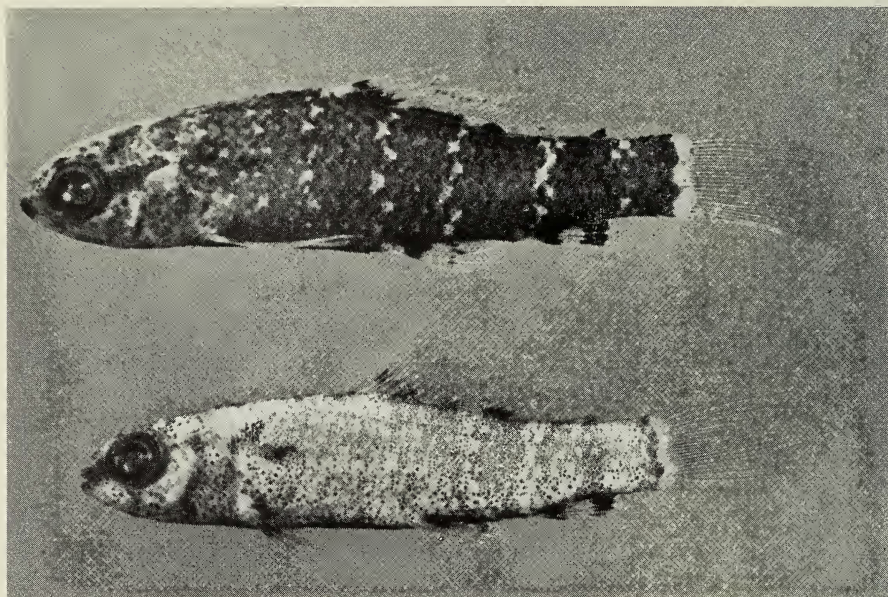


Fig. 3. *Elachocharax pulcher* Myers, MZUSP 7479, SL 14.0 mm for lower specimen, 17.0 for upper specimen, Rio Sanabani, near Silves, State of Amazonas, Brazil, December 1967.

216919, (13), 12.8–21.0 mm SL.—MCZ 52468, (2), 14.3–14.5 mm SL.—ANSP 138013, (3), 13.1–15.0 mm SL.—BMNH 1977.4.25.7–8, (2), 13.3–15.9 mm SL.—MZUSP 13233–13234, (2), both 14.5 mm SL, Brazil, State of Amazonas, Lago Miua (62°10'W, 3°45'S), north of Codajas, 25 September 1963.—MZUSP 7441, (2), 14.8–15.4 mm SL, Brazil, State of Amazonas, Rio Sanabani near Silves (58°27'W, 2°52'S), H. Britski, EPA, 8 December 1967.—MZUSP (no number), (33), (not measured), Brazil, State of Amazonas, Rio Sanabani near Silves, H. Britski, EPA, 7 December 1967.—USNM 216920, (25), 12.9–16.6 mm SL, 3 cleared and stained, same locality as MZUSP (unnumbered) above.—MZUSP 7123, (1), 13.8 mm SL, Brazil, State of Amazonas, an igarapé on right bank of Rio Canumã at Canumã (59°5'W, 4°3'S), H. Britski, EPA, 28 November 1967.—MZUSP 13236–13238, (3), 13.5–14.3 mm SL, Brazil, Territory of Roraima, an igarapé about 1 km north of Caracarai, Rio Branco (61°8'W, 1°50'N), T. Roberts, 5 February 1969.—MZUSP 13241, (1), 15.8 mm SL, Brazil, State of Pará, Igarapé Acu, Aveiro (55°4'W, 3°12'S), Rio Tapajos, EPA, 30 October 1970.—SMF 7216–9, (4), (paratypes of *Elachocharax georgiae*), 16.0–17.5 mm SL, Brazil, State of Amazonas, Igarapé Prêto, 60 km downstream from the border zone between Perú, Colombia, and Brazil, Harald Schultz, December 1960.



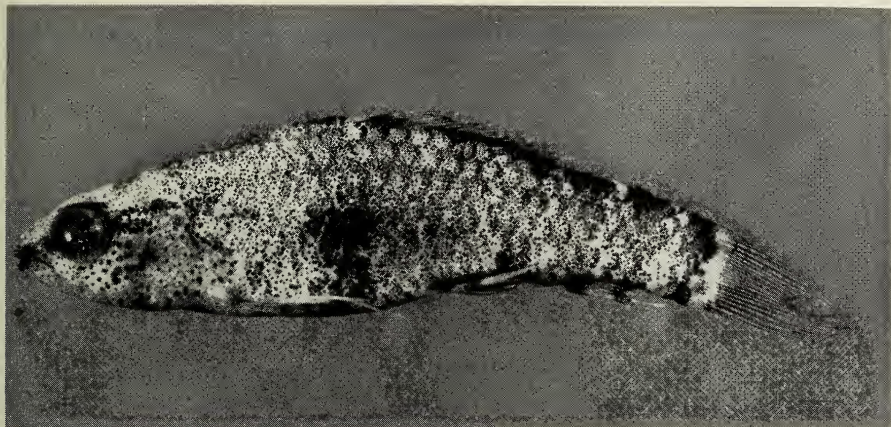


Fig. 4. *Elachocharax pulcher* Myers, USNM 216919, SL 21.0 mm, São João near Tapurucuara, Rio Negro, State of Amazonas, Brazil, October 1972.

*Diagnosis.*—Anterior teeth of premaxillary and dentary tricuspid or bicuspid. Adipose fin present. Scale rows around caudal peduncle 12. Body with about 7 or 8 vertical dark bars. Caudal fin with 1, or sometimes 2, narrow vertical bars near base. Anal fin with one dark blotch and a vertical bar posterior to blotch. Pelvic fin with a dark blotch near its base and a narrow dark stripe distally. Branchiostegal rays 5.

*Description.*—In description morphometrics (expressed as percentages of standard length) are given first for holotype followed in parentheses by

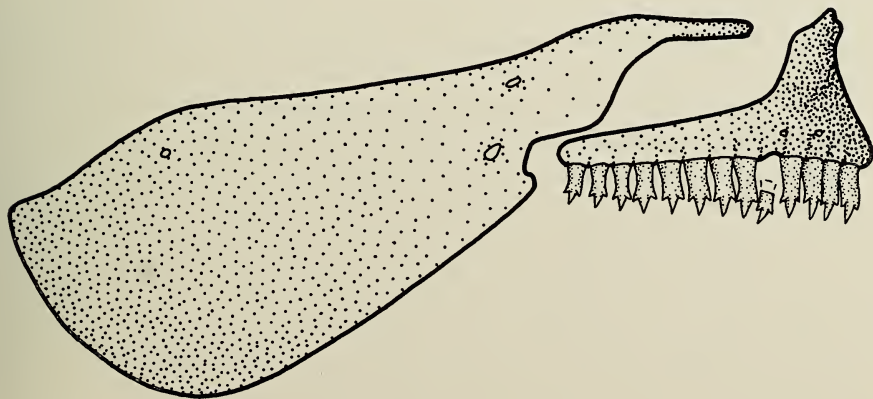


Fig. 5. *Elachocharax pulcher* Myers, USNM 216921, SL 16.3 mm, laguna near San Fernando de Atabapo, Territorio Federal de Amazonas, Venezuela, April 1973. Lateral view of premaxillary and maxillary bones of right side. Anterior is to the right.

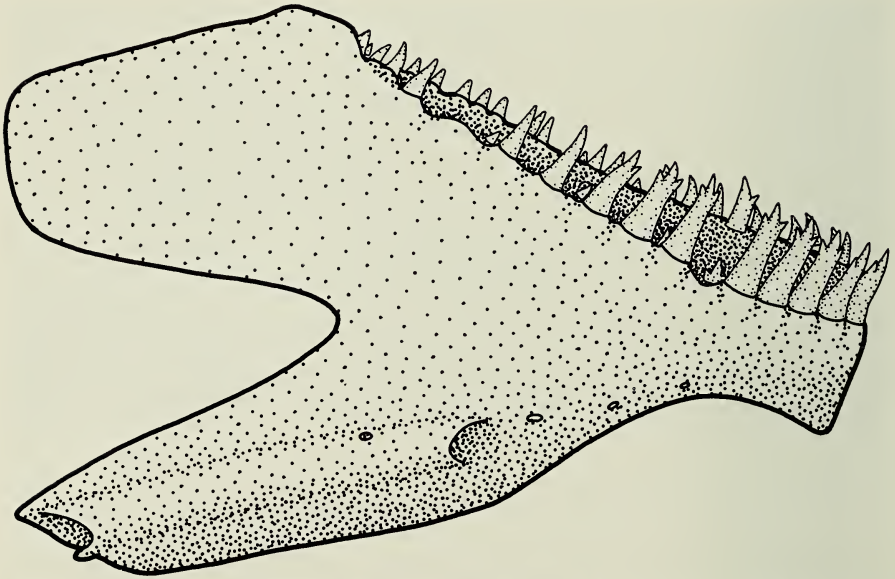


Fig. 6. *Elachocharax pulcher* Myers, USNM 216921, SL 16.3 mm, laguna near San Fernando de Atabapo, Territorio Federal de Amazonas, Venezuela, April 1973. Lateral view of right dentary bone. Note that outer tooth row lies in a deep groove and that the replacement teeth develop in that groove. The inner row teeth may be seen posterior to the ridge behind the groove. Anterior is to the right.

range and mean for all specimens. Table 1 separately presents ranges and means of morphometrics for population samples from several widely separated localities.

Body relatively short in comparison to most members of the Characidiinae; greatest depth 26.7 (23.8–29.7,  $\bar{x}$  = 26.4). Tip of snout to anterior dorsal-fin origin 49.7 (49.7–57.7,  $\bar{x}$  = 53.4). Profile of head and back from snout tip to dorsal-fin origin gently convex. Dorsal-fin origin in advance of pelvic-fin origin. Tip of snout to anterior anal-fin origin 77.6 (73.8–83.9,  $\bar{x}$  = 79.1). Anal-fin origin below or somewhat posterior to posterior termination of dorsal-fin base. Tip of snout to anus 72.1 (69.7–79.9,  $\bar{x}$  = 74.6). Tip of snout to pelvic-fin origin 57.6 (55.9–65.0,  $\bar{x}$  = 59.5). Profile of ventral surface of head gently convex. Belly slightly concave to very gently convex from region of isthmus to pelvic-fin origin. Profile of body between pelvic-fin origin and anal-fin origin slightly concave to nearly straight. Length of caudal peduncle 17.6 (14.4–18.0,  $\bar{x}$  = 16.5). Both dorsal and ventral profiles of caudal peduncle nearly straight to very slightly concave. Least depth of caudal peduncle 13.3 (12.5–16.0,  $\bar{x}$  = 13.8).

Head moderately long, 32.1 (32.1–36.9,  $\bar{x}$  = 34.8). Mouth terminal; snout

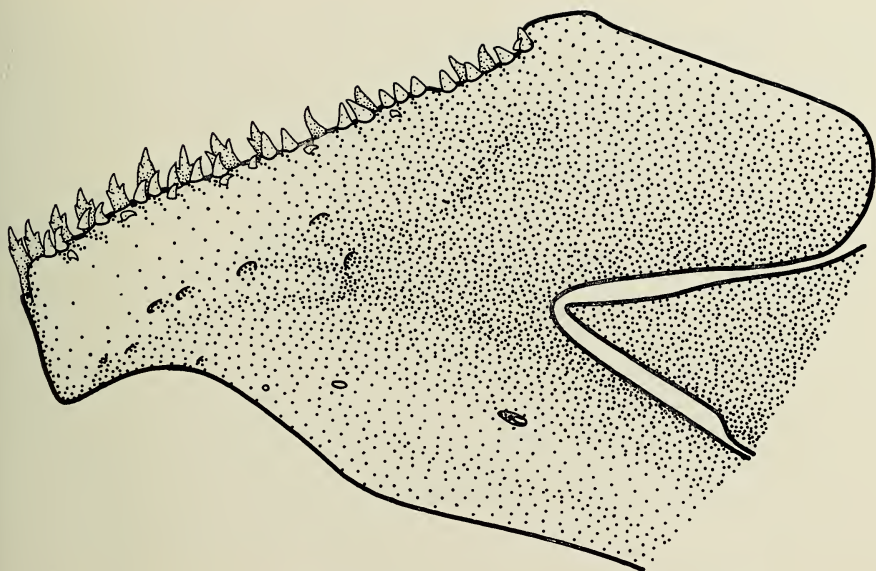


Fig. 7. *Elachocharax pulcher* Myers, USNM 216921, SL 16.3 mm, laguna near San Fernando de Atabapo, Territorio Federal de Amazonas, Venezuela, April 1973. Medial view of right dentary bone. Note 7 small replacement teeth appear posterior medial to inner row of conic teeth which are attached to dentary ridge behind outer tooth row. Anterior is to the left.

blunt, 6.7 (6.1–8.6,  $\bar{x}$  = 7.3). Eye large, horizontal diameter 9.1 (8.5–12.4,  $\bar{x}$  = 10.6). Least bony interorbital width 5.5 (4.8–6.2,  $\bar{x}$  = 5.5).

Tooth counts for holotype given first followed by those in parentheses for 16.3 (see Figures 5–7) and 16.9 mm SL cleared and stained specimens, USNM 216921, from San Fernando de Atabapo, Venezuela, and in brackets for 3 cleared and stained specimens 14.0, 14.5, and 16.0 mm SL, USNM 216920, from Rio Sanabani, Brazil. Both teeth and empty “sockets” of teeth in process of being replaced are counted. Tooth cusps are counted for teeth in place and for those of replacing teeth not yet ankylosed in “sockets.” Teeth tricuspid, bicuspid, or conic. Two rows on dentary, outer (anterior and lateral) row with damaged (8 tricuspid, 1 bicuspid, 4 conic,  $n$  = 13; 9 tricuspid) [7 tricuspid, 7 conic,  $n$  = 14; 10 tricuspid, 2 conic,  $n$  = 12; 10 tricuspid, 2 conic,  $n$  = 12]. Inner (posterior and medial) dentary row with all conic teeth, damaged (23; 20) [14; 22; 24]. Premaxillary with a single row of tricuspid, bicuspid or conic teeth, 12, apparently tricuspid (13; 14, both with all teeth tricuspid) [7 tricuspid, 6 conic,  $n$  = 13; 4 tricuspid, 4 bicuspid, 1 tricuspid and 4 conic,  $n$  = 13; 14 irregularly tricuspid, bicuspid, and conic teeth, anteriormost teeth tricuspid and posteriormost teeth conic].





Fig. 8. Localities reported for *Elachocharax pulcher* Myers. 1. Type locality, Caicara, Venezuela; 2. Río Pacia Grande, Venezuela; 3. San Fernando de Atabapo, Venezuela; 4. Caño Muco, Colombia; 5. Tapurucuara, Brazil; 6. Río Prêto, Brazil; 7. Lago Miua, Brazil; 8. Caracarai, Brazil; 9. Río Sanabani, Brazil; 10. Río Canumã, Brazil; 11. Aveiro, Brazil.

Maxillary toothless. Ectopterygoid with conic teeth in a single row, cleared and stained specimens only (7; 9) [9; 10; 10].

Branchiostegal rays 5 in all alizarin specimens and in holotype; 3 slender rays on ceratohyal followed by one broad ray on ceratohyal and another broad ray on epihyal. Gill rakers 5/8 (4/8; 5/8) [4/7; 4/7; 4/7]. Frontal-parietal foramen reduced, bounded by posterior medial borders of frontals, medial borders of narrow parietals, and posteriorly by supraoccipital. First (anterior) circumorbital bone large, well ossified, with a narrow antorbital bone dorsal and posterolateral to posterior dorsal portion of first circumorbital. First circumorbital with an anterior process extending dorsal and anterior to anterior dorsal slender process of maxillary bone. Second circumorbital bone a narrow bony laterosensory tube. Remaining circumorbitals when present (in larger specimens) simple, laterosensory bony tubes.

In scale and fin-ray counts below, those for holotype given first followed in parentheses by those for specimens from San Fernando de Atabapo, then those for specimens from Tapurucuara, followed by those for specimens from Río Sanabani in brackets. Those from Igarapé Prêto (paratypes of *E. georgiae*) given last.

Table 1. Morphometrics of *Elaeocharax pulcher*. Standard length is expressed in mm. Other measurements are percentages of standard length.

|                                | Venezuela near Caicara (holotype) | Venezuela near San Fernando de Atabapo | Brazil near Tapurucuara | Brazil Rio Sanabani | Brazil Rio Tapajós | Brazil, Igarapé Preto paratype of <i>E. georgiae</i> |         |           |
|--------------------------------|-----------------------------------|--|-------------------------|---------------------|--------------------|--|---------|-----------|
|                                | (n = 6)                           | $\bar{x}$                              | (n = 8)                 | $\bar{x}$           | (n = 14)           | $\bar{x}$  | (n = 4) | $\bar{x}$ |
| Standard length                | 16.5                              | 15.6-17.3                              | 13.1-21.0               | 14.1-17.3           | 16.2               | 16.0-19.1  |         |           |
| Greatest depth                 | 26.7                              | 26.7-28.8                              | 25.4-29.7               | 27.5                | 26.3               | 24.6-25.6  | 24.8    |           |
| Snout to dorsal-fin origin     | 49.7                              | 50.3-55.5                              | 52.4-57.7               | 54.6                | 53.8               | 50.9-52.4  | 52.1    |           |
| Snout to anal-fin origin       | 77.6                              | 77.0-81.9                              | 78.7-83.9               | 80.5                | 75.6               | 76.0-78.1  | 77.4    |           |
| Snout to anus                  | 72.1                              | 72.0-77.5                              | 73.1-79.9               | 75.9                | 75.0               | 69.7-73.1  | 72.0    |           |
| Snout to pelvic-fin origin     | 57.6                              | 59.4-65.0                              | 58.7-62.1               | 60.0                | 56.3               | 56.0-59.5  | 58.6    |           |
| Length of caudal peduncle      | 17.6                              | 14.8-17.1                              | 15.4-19.2               | 16.5                | 16.5               | 14.4-15.8  | 15.3    |           |
| Least depth of caudal peduncle | 13.3                              | 13.1-14.4                              | 13.9-16.0               | 14.7                | 13.1               | 12.5-13.3  | 12.9    |           |
| Head                           | 32.1                              | 32.7-36.9                              | 33.3-36.9               | 35.4                | 32.5               | 32.6-35.6  | 34.1    |           |
| Snout                          | 6.7                               | 6.1-7.1                                | 6.7-7.7                 | 7.3                 | 6.3                | 7.3-7.5  | 7.39    |           |
| Eye                            | 9.1                               | 8.5-10.3                               | 8.6-10.8                | 9.9                 | 10.6               | 10.5-11.9  | 11.2    |           |
| Interorbital width             | 5.5                               | 5.1-5.8                                | 4.8-5.4                 | 5.2                 | 5.6                | 5.1-5.6  | 5.4     |           |
| Pectoral-fin length            | —                                 | 28.1-32.2                              | 28.6-32.3               | 31.8                | 34.4               | 31.3-35.8  | 33.1    |           |
| Pelvic-fin length              | —                                 | 20.6-22.6                              | 20.0-23.1               | 21.8                | 24.4               | 21.7-24.2  | 22.5    |           |

Table 2. Number of scales in a lateral series of *Elachocharax pulcher*.

|                         | 26 | 27 | 28 | 29 | 30 |
|-------------------------|----|----|----|----|----|
| Caicara (Holotype)      |    | 1  |    |    |    |
| Caño Muco               |    | 1  |    |    |    |
| San Fernando de Atabapo | 1  | 4  |    | 1  |    |
| Tapurucuara             | 1  | 3  | 2  | 3  |    |
| Igarapé Prêto           |    |    | 1  | 3  |    |
| Lago Miua               |    |    |    | 1  |    |
| Rio Sanabani            |    | 2  | 6  | 5  | 1  |
| Aveiro                  |    |    | 1  |    |    |

Scales cycloid with 4-6 radii on exposed field. Lateral line with ?, 5 or 6 according to Myers (1927) (5-8,  $\bar{x} = 6.4$ ) 6-7,  $\bar{x} = 6.8$  [7-9,  $\bar{x} = 7.8$ ] 6-9,  $\bar{x} = 8$  perforated scales. Scales in a lateral series 27 (26-29,  $\bar{x} = 27.1$ ) 26-29,  $\bar{x} = 27.8$  [27-30,  $\bar{x} = 28.5$ ] 28-29,  $\bar{x} = 28.8$ . Scale rows between dorsal and anal fins 8 in all specimens. Scale rows around caudal peduncle 12 in all specimens. Predorsal scales ? (11-11,  $\bar{x} = 11$ ) 10-11,  $\bar{x} = 10.4$  [9-11,  $\bar{x} = 10$ ] 11 in all specimens. Area on belly anterior to pectoral fin with scales.

Dorsal fin variable in number of unbranched and branched fin rays. Total ray number ranges from 17-20 with  $\bar{x} = 18.5$ ,  $n = 38$ . Dorsal-fin ray counts as follows for holotype and larger population samples: 19, fin damaged (iii,14 in one; ii,15 in one; ii,16 in two; iii, 16 in one, ii,17 in one,  $\bar{x} = 18$ ) iii,15 in one; ii,16 in two; ii,16 in five; ii,17 in one,  $\bar{x} = 18.7$  [ii,15 in one; iii,15 in six; iv,15 in one, ii,16 in two, iii,16 in three; ii,17 in one; iii,17 in three,  $\bar{x} = 18.7$ ] iv,14 in one; iii,16 in two; one with total of 19, fin damaged,  $\bar{x} = 18.5$ . Adipose fin present in all specimens. Anal-fin rays somewhat variable in number of unbranched and branched rays. Total ray number 8-10 with  $\bar{x} = 8.5$ ,  $n = 38$ . Anal-fin ray counts as follows for holotype and larger population samples: 9, fin damaged (ii,6 in five, ii,7 in one,  $\bar{x} = 8.2$ ) ii,5,i in one; ii,6 in four; ii,6,i in three; ii,7 in one,  $\bar{x} = 8.4$  [ii,6 in two; ii,6,i in one; ii,7 in thirteen; ii,8 in one,  $\bar{x} = 8.9$ ] ii,6 in three; ii,7 in one,  $\bar{x} = 8.3$ . Pectoral fin inserted low on body, but narrow and not broad at base to provide flat surface against substrate as in certain species of *Characidium*. Pectoral fin elongate, reaching nearly to or slightly beyond origin of pelvic fin. Pectoral-fin rays nearly always with unbranched rays but one specimen from Río Muco, Colombia had a count of iii,5 and two from Igarapé Prêto, Brazil had counts of iii,4. Total count 6-9; 6 in three; 7 in thirteen, 8 in twenty-one, and 9 in one with  $\bar{x} = 7.5$ ,  $n = 38$ . Pectoral-fin ray count as follows for holotype and larger population samples; 9 (8 in six) 6 in two; 7 in four; 8 in three [6 in one; 7 in three; 8 in ten] 7 in three; 8 in one. Pelvic fin usually i,7: i,7 (i,7 in all specimens) iii,4,i in one; iii,5,i in one; i,6 in one; i,6,i in two; i,7 in four [i,6 in one; i,6,i in



five; i,7 in eleven] i,7 in four. Pelvic fin relatively short, reaching anus but usually not reaching anal-fin origin. Caudal fin forked with principal ray count 9/8 in all specimens.

Total number of vertebrae including Weberian apparatus and terminal half centrum 30 (30 in all specimens) 30 in twenty-one; 31 in two [30 in one; 31 in twenty-four] 31 in four specimens. Note also that in three specimens from Río Pacia Grande, Venezuela one specimen had 29 vertebrae and two had 30. Supraneural bones 4.

*Color in alcohol.*—Background color pale yellowish brown to nearly white with dark brown chromatophores relatively dense in nearly all areas of body of some specimens except for space occupied by 7–8 usually narrow vertical pale bars. Exposed border areas of scales often more densely covered with dark brown chromatophores than central scale areas. This shows especially well in Figure 4. Body color often dark, as in upper specimen of Figure 3 in which chromatophores are dense and expanded, or sometimes pale, as in lower specimen in which chromatophores are less dense and are contracted (both from Rio Sanabani, Brazil). Pale color phase due to contraction of dark chromatophores which when expanded produce dark color phase. Dark “shoulder” blotch present on body just dorsal to opercle with a circular or somewhat elongate dark blotch just posterior to it. These spots show best in Figs. 2 and 3. They correspond to similar blotches on *E. geryi*. Between nape and dorsal-fin origin broad dark vertical bars occur separated by 3 narrow pale bars. Appearance and clarity of these and following bars variable depending on dark, intermediate, or light color phases. Fourth and fifth broad dark vertical bars on body ventral to dorsal fin with posterior termination of dorsal fin in mid area of a sixth dark vertical bar. Two more dark vertical bars, numbers 7 and 8, occur before a bright white vertical bar which covers root of caudal fin. All vertical bars extend from dorsal body profile to ventral body profile. White vertical bar at caudal-fin root due to fat deposits, not white pigment. No obvious small dark spots along sides of body at junction of hypaxial and epaxial muscles.

Top of head and snout pale, often nearly white except for a dark band across top of head just dorsal to posterior border of eye. Another narrower band across narrowest portion of interorbital and a final small band or spot between nares. Anterior tips of upper and lower jaws dark brown; upper jaw pigment extending as a broad stripe to anterior border of eye. Dark brown chromatophores ventral to eye sometimes organized into one or two short vertical bars. Opercle with scattered chromatophores which are often more dense on ventral half to three fourths of opercle. Ventral surface of head pale but often spotted with small dark brown chromatophores.

Caudal fin essentially without bars but dark pigment near white at base may form one or two vertical bars. Dorsal fin mostly hyaline, but with

a narrow horizontal stripe, mostly on fin rays extends nearly length of fin at about one-third to one-half height of fin above its base. Distal tips of all dorsal-fin rays dusky (Fig. 2) or nearly hyaline (Fig. 3). Basal portion of dorsal fin very dark, often black where dorsal fin joins dark pigment of broad vertical bars. Anal fin hyaline except for two dark vertical bars, one near anterior base of fin, other placed about two-thirds of fin length from fin base. Pelvic fins hyaline but with two dark blotches or stripes, a large one near fin base and a narrow blotch or stripe more distally placed. Pectoral fin hyaline but with scattered small dark chromatophores, especially near its base.

Color in life unknown.

*Variation.*—Color variation within population samples (see Fig. 3 for extremes in one population sample) is too great to detect variation between population samples. However, some variation does occur in meristic data. Table 1 shows very little variation among sampled populations in morphometric data but in meristic data for example, vertebral counts may differ, there being 30 in twenty-one and 31 in one specimen from Tapuruçua, Rio Negro, Brazil and 30 in one and 31 in twenty-four specimens from Rio Sanabani, Rio Amazonas, Brazil. Some variation between populations perhaps also occurs in the total number of scales in a lateral series as noted can be seen in Table 2 which suggests that the population samples from the Rio Negro in Brazil and those from the Río Orinoco basin may tend to have one or two fewer scales than those from the Rio Amazonas and its tributaries exclusive of the Rio Negro.

*Comments on synonymy.*—Géry (1965:206), in separating his new species *E. georgiae* from *E. pulcher*, states the following: "Le pattern des deux espèces semble voisin à en juger par la description no figurée de *E. pulcher*." He goes on to state that [although the color pattern is not known to be different] the two essentially differ by their squamation. Citing and comparing Myers' (1927) data with his own he notes the following for *E. pulcher* and *E. georgiae* respectively. Lateral line scale 5–6 versus 7–8, scales in a lateral series 25 versus 28–31 and scales in a transverse series 6 versus 8. The difference in the transverse series count is due to a difference in method of counting. Myers counted the large principal scales whereas Géry also counted the small scales at the dorsal and anal fins. Counting all scales as Géry we obtained 8 scales in all specimens examined including the holotype of *E. pulcher* and four paratypes of *E. georgiae*. The difference in scales in a lateral series is again perhaps due to a somewhat different method of counting. We obtained a count of 27, not 25, on the holotype of *E. pulcher* and found a range of 26–30 in the 38 specimens counted in our study. It is no longer possible to count lateral-line scales on the holotype of *E. pulcher*, but both Géry's count for *E. georgiae* and that of Myers for *E. pulcher* are within the range we found in a count of 29 specimens,

5–9,  $\bar{x} = 7.4$ . Thus there appears to be no significant differences in scale counts between type specimens of these two nominal species.

Géry (1965) further separated *E. georgiae* from *E. pulcher* by comparing head length in standard length and depth in standard length. For the former measurement he found *E. georgiae* to have a head length 2.88–3.35 in the standard length whereas Myers (1927) recorded 3.5 for *E. pulcher*. We find the head length of the holotype of *E. pulcher* to be 3.11 in the standard length and our other specimens ( $n = 38$ ) including four paratypes of *E. georgiae* to be from 2.71–3.11,  $\bar{x} = 2.86$ . We find no great difference in head length between the holotype of *E. pulcher* and other specimens we have at hand that we refer to *E. pulcher* including the four paratypes of *E. georgiae*. The holotype of *E. pulcher* is at one end of the range, while the paratypes of *E. georgiae* cluster in the median area of the range for head length in standard length for all specimens. In a similar fashion Géry (1965) recorded the difference between *E. pulcher* and *E. georgiae* of the depth in standard length to be 3.5 and 4.06–4.50 respectively. We find the holotype of *E. pulcher* to have a depth of 3.75 and the range of the other specimens, including four paratypes of *E. georgiae*, to be 3.37–4.21,  $\bar{x} = 3.78$ . Again we find no significant differences in these morphometric characters serving to distinguish the nominal *E. georgiae* from *E. pulcher*.

*Elachocharax geryi* new species

Figs. 9–14, Table 3

*Holotype*.—MZUSP 13249, SL 19.0 mm, Brazil, State of Amazonas, Rio Negro, Lago Paricatuba (60°30'W, 3°7'S), 11 November 1972, P. Vanzolini for EPA.

*Paratypes*.—2, MZUSP 13253–13254, SL 13.0–13.5 mm.—1, ANSP 138029, SL 12.5 mm.—2, USNM 216558, SL 14.5–15.5 mm, all lots with same data as holotype.

The following specimens are not types: 1, USNM 215288, SL 12.5 mm, Colombia, State of Vichada, Caño Muco (between 70°2'W, 4°15'N and 71°58'W, 4°98'N), a tributary of Río Vichada, 24 April 1974, J. E. Thomerson, D. L. Hicks and J. F. Vaques.—1, FMNH 83830, SL 12.5 mm, with same data as preceding specimen.

*Diagnosis*.—Anterior teeth of premaxillary and dentary simple, conic. Adipose fin absent. Scale rows around caudal peduncle 14. Body with about 11 vertical dark bars. Caudal fin with 13–14 narrow vertical bars, completely covering fin. Anal fin with a single dark blotch. Pelvic fin with a dark blotch near its base. Branchiostegal rays 4.

*Description*.—In the description, morphometrics (expressed as percentages of standard length) are given first for holotype followed in parentheses by ranges and means of morphometrics of specimens from Lago Paricatuba,



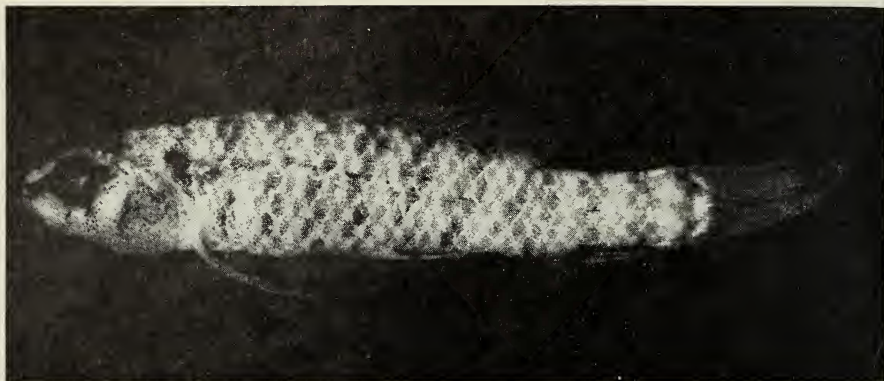


Fig. 9. *Elachocharax geryi*, new species, MZUSP 13249, SL 19.0 mm, holotype, Lago Paricatuba, Rio Negro, State of Amazonas, Brazil, November 1972.

Brazil and Caño Muco, Colombia. Table 3 separately presents ranges and means of morphometrics for population samples from Lago Paricatuba and Caño Muco.

Body relatively short for a member of Characidiinae; greatest depth at anterior dorsal-fin origin 24.2 (24.2–29.2,  $\bar{x}$  = 27.5). Tip of snout to anterior dorsal-fin origin 50.5 (46.9–52.8,  $\bar{x}$  = 50.4). Profile of head and back from snout tip to dorsal-fin origin gently convex. Dorsal-fin origin in advance of pelvic-fin origin. Tip of snout to anterior anal-fin origin 78.9 (73.8–80.0,  $\bar{x}$  = 74.4). Anal-fin origin below posterior termination of dorsal-fin base. Tip of snout to anus 70.0 (69.7–75.4,  $\bar{x}$  = 71.5). Tip of snout to pelvic-fin origin 57.9 (55.2–60.0,  $\bar{x}$  = 57.0). Profile of ventral surface of head gently and convexly curved. Belly slightly concave to very gently convex from region of

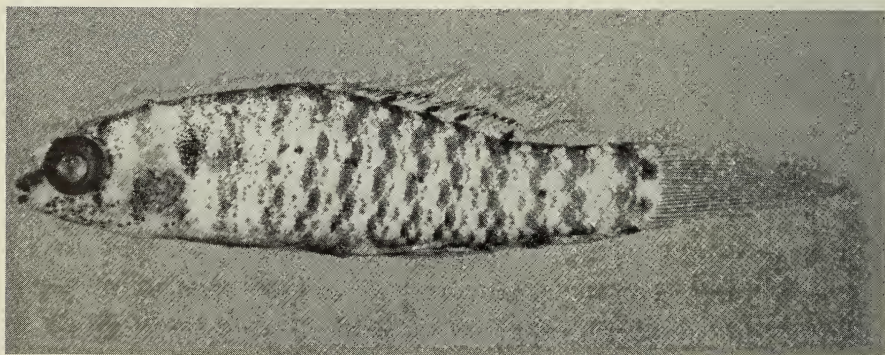


Fig. 10. *Elachocharax geryi*, new species, FMNH 83830, SL 12.5 mm, Caño Muco, Rio Vichada, State of Vichada, Colombia, April 1974.

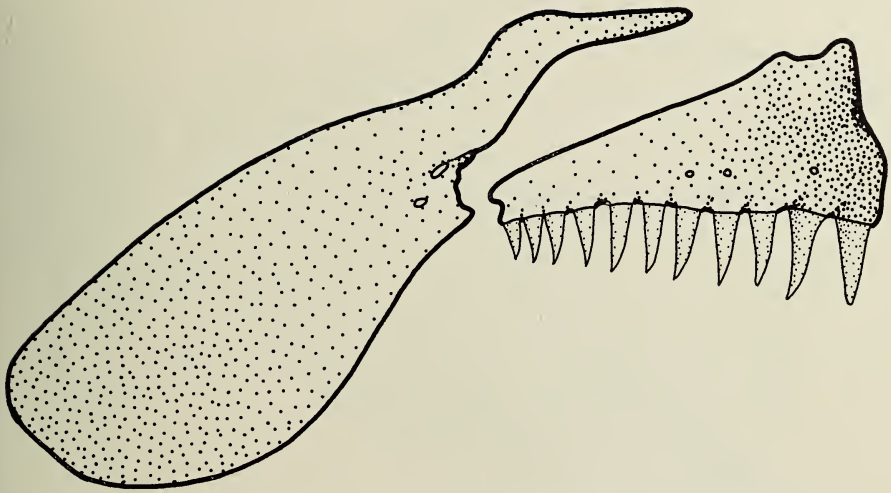


Fig. 11. *Elachocharax geryi*, new species, from a paratype, USNM 215288, SL 12.5 mm, Lago Paricatuba, Rio Negro, State of Amazonas, Brazil, November 1972. Lateral view of premaxillary and maxillary bones of right side. Anterior is to the right.

isthmus to pelvic-fin origin. Profile of body between pelvic fin and anal-fin origin slightly concave to nearly straight. Length of caudal peduncle 18.4 (16.0–19.2,  $\bar{x}$  = 17.7). Both dorsal and ventral profiles of caudal peduncle nearly straight or slightly concave. Least depth of caudal peduncle 12.1 (12.1–16.0,  $\bar{x}$  = 14.6).

Head moderately long, 26.3 (26.3–33.6,  $\bar{x}$  = 32.3). Mouth terminal; snout blunt, 6.3 (6.3–7.7,  $\bar{x}$  = 7.1). Eye large, horizontal diameter 9.5 (9.5–12.0,  $\bar{x}$  = 10.4). Least bony interorbital width 5.3 (5.2–5.6,  $\bar{x}$  = 5.4).

Tooth counts of cleared and stained jaws of right side of holotype given first and of stained specimen, USNM 215288 (Figs. 11–13), from Colombia, given second in brackets. Both teeth and empty “sockets” of teeth in process of being replaced are counted. All teeth conic. Dentary with 2 rows; outer (anterior and lateral) row with 13 [11] and inner (posterior and medial) row with 16 [13] teeth. Maxillary toothless. Premaxillary with one row of 11 [11] teeth. Ectopterygoid with 5 [3 plus a fourth poorly developed] teeth.

Branchiostegal rays 4 in alizarin preparation, USNM 215288, all other specimens appear to have 4 but absolute determination difficult. Ceratohyal with 3 rays, posterior fourth ray articulated with epihyal. Gill rakers 3/7 in USNM 215288, not counted in holotype. Frontal-parietal foramen relatively large compared to that of *E. pulcher*. Its anterior and medial borders bounded by posterior medial border of frontals, medial border of parietals.

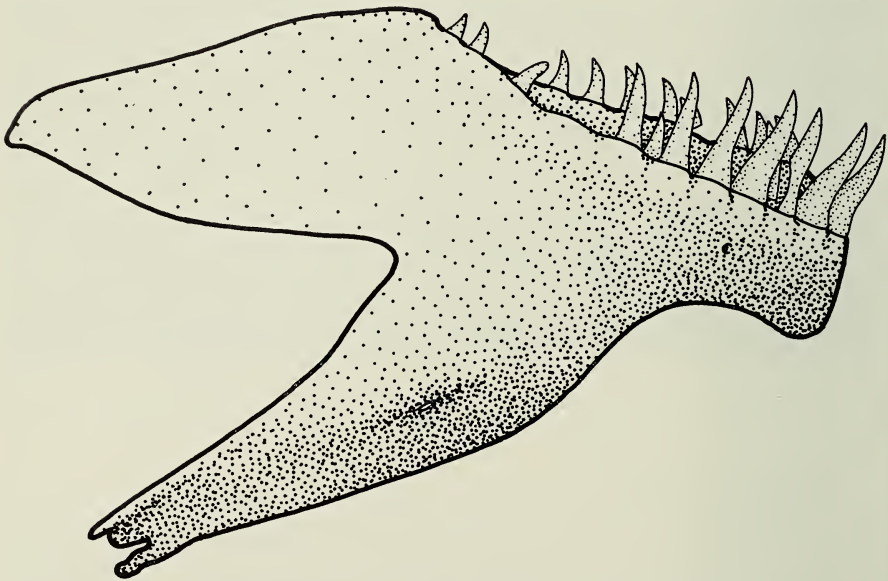


Fig. 12. *Elachocharax geryi*, new species, from a paratype, USNM 215288, SL 12.5 mm, Lago Paricatuba, Rio Negro, Brazil, November 1972. Lateral view of right dentary bone. Note third tooth from anterior-median border of dentary is being eroded at its inner base, preparatory to being shed. A small replacement tooth posterior to it is forming and can be seen partly obscured by the fourth tooth. Anterior is to the right.

Posterior border of fontanel bounded by supraoccipital. First (anterior) circumorbital bone large, well ossified with a slender antorbital bone dorsal and lateral to posterior part of dorsal border of first circumorbital. First circumorbital with a dorsoanterior process extending dorsal and anterior to anterior dorsal slender process of maxillary bone. Second circumorbital bone small, present as a laterosensory bony tube sometimes not ossified. Remaining orbital bones apparently not ossified.

In scale and fin-ray counts below, those for holotype given first followed by remaining specimens from Brazil in parentheses followed by specimens from Colombia in brackets.

Scales cycloid with 2-6 radii on exposed field. Lateral line of 6 (6 in three and 7 in one specimen) [6 in two specimens] perforated scales. Scales in a lateral series 28 (27 in two; 28 in one; 29 in two) [27 in two]. Scale rows between dorsal and anal fin 8 in all specimens. Scale rows around caudal peduncle 14 in all specimens. Predorsal scales 9 (8 in one; 9 in two; 10 in two) [9 in two]. Area on belly anterior to pectoral-fin base fully squamated.

Dorsal fin variable in number of unbranched and branched fin rays.



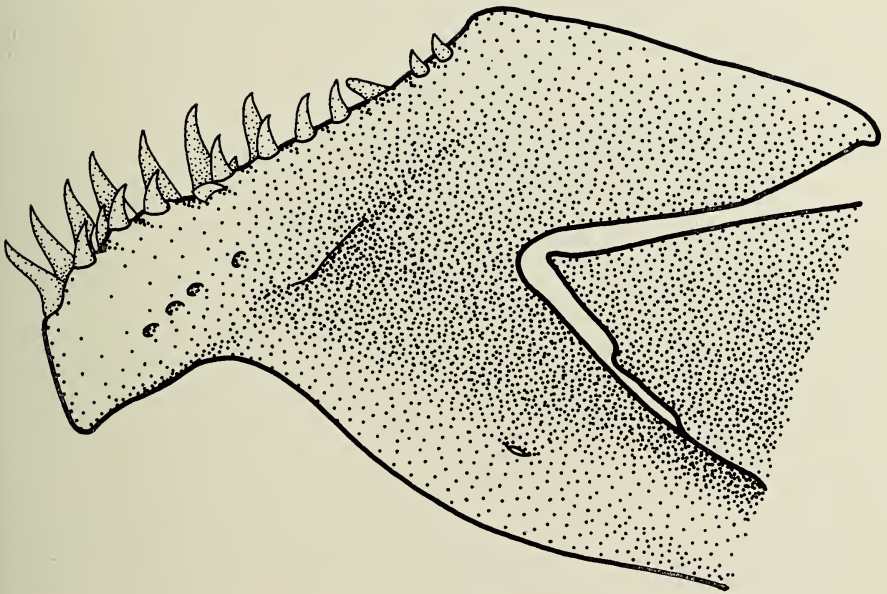


Fig. 13. *Elachocharax geryi*, new species, from a paratype, USNM 215288, SL 12.5 mm, Lago Paricatuba, Rio Negro, Brazil, November 1972. Median view of dentary of right side. Anterior is to left.

Total ray number ranged from 20–22 with two specimens having 20, two 21, and four 22,  $\bar{x} = 21.3$ . Actual dorsal-fin ray counts as follows: vi,15 (iii,19; x,11; xi,10,i, xiii,8 and xiii,7) [xiv,7,i and xvi,5]. Adipose fin absent. Anal-fin rays somewhat variable in number of unbranched and branched rays but always total 8 or 9 rays,  $\bar{x} = 8.1$ . Actual counts as follows: ii,5,i (ii,6 in four and iii,6 in one) [iii,3,ii and iii,4,i]. Pectoral fin inserted low on body, narrow and not broad at base to provide a flat surface against substrate as in some species of *Characidium*. Pectoral fin elongate, reaching to or slightly beyond origin of pelvic fin. Pectoral-fin rays all unbranched, vi (vii in three, viii in one) [vi in two]. Pelvic-fin rays relatively short, usually not reaching to anal-fin origin, i,6,i (i,6 in three and i,7 in two) [iii,2,ii and i,5,i]. Caudal fin forked, with principal ray count 9/8 in all specimens except one paratype from Lago Paricatuba, Brazil with 7/7.

Total number of vertebrae including Weberian apparatus and terminal half centrum, in specimens from Lago Paricatuba, Brazil, 31 in two, 32 in four. Specimens from Caño Muco, Colombia, 31 in two. Supraneural bones 4.

*Color in alcohol*.—Body pale yellowish brown with brown chromatophores moderately dense in all but exposed border areas of scales. In areas of



Fig. 14. Localities reported for *Elachocharax geryi*, new species. 1. Type locality, Lago Paricatuba, Brazil; 2. Caño Muco, Colombia.

vertical dark body bars (described below) this same color much darker, each dark brown chromatophore containing more pigment as well as there being a higher number of chromatophores per scale. Resulting dark scales with pale posterior borders organized into 10 or 11 vertical bars along body length. Anterior vertical bar a short, very dense, nearly black, triangular "shoulder" blotch with long angle of triangle extending ventrally. Shoulder blotch confined to area immediately posterior to head and dorsal to dorsoposterior border of opercle. Between shoulder spot and dorsal-fin origin are 3 vertical bars, posterior one originating dorsally at or just anterior to dorsal-fin origin. These bars extend from dorsal body profile to ventral body profile. Three or four similar vertical bars occur ventral to dorsal fin, most posterior bar being ventral to posterior termination of dorsal fin. Caudal peduncle with 3 similar vertical bars, most posterior bar being at root of caudal fin on caudal peduncle. Basal area of caudal fin posterior to terminal vertical bar white (due to visible fat deposits, not to pigment in skin) with a very dark scale-sized spot at base of dorsal and ventral caudal-fin lobes. At junctions of hypaxial and epaxial muscles, along midside along length of body occur irregularly distributed small very dark dense spots (see Figs. 9 and 10).

Top of head dark brown, especially in area above posterior part of brain where brown color organized into a fine reticulate pattern. Superficial to this anatomically deep reticulate pattern, dark brown chromatophores

Table 3. Morphometrics of *Elachocharax geryi*, new species. Standard length is expressed in mm. Other measurements are percentages of standard length.

|                                | Brazil, Rio Negro,<br>Lago Paricatuba |           | Colombia, Rio Vichada,<br>Caño Muco |           |
|--------------------------------|---------------------------------------|-----------|-------------------------------------|-----------|
|                                | <i>n</i> = 6                          | $\bar{x}$ | <i>n</i> = 2                        | $\bar{x}$ |
| Standard length                | 13.2–19.0                             |           | 12.5–12.5                           |           |
| Greatest depth                 | 24.2–29.2                             | 27.4      | 28.0–28.0                           | 28.0      |
| Snout to dorsal-fin origin     | 46.9–51.9                             | 49.8      | 52.0–52.8                           | 52.4      |
| Snout to anal-fin origin       | 73.8–80.0                             | 77.8      | 76.0–76.8                           | 76.4      |
| Snout to anus                  | 69.7–75.4                             | 71.5      | 71.2–72.0                           | 71.6      |
| Snout to pelvic-fin origin     | 55.2–60.0                             | 57.1      | 55.2–57.6                           | 56.4      |
| Length of caudal peduncle      | 16.0–18.7                             | 17.4      | 18.4–19.2                           | 18.8      |
| Least depth of caudal peduncle | 12.1–15.6                             | 14.3      | 15.2–16.0                           | 15.6      |
| Head                           | 26.3–30.8                             | 28.9      | 32.0–33.6                           | 32.8      |
| Snout                          | 6.3–7.7                               | 7.1       | 7.2–7.2                             | 7.2       |
| Eye                            | 9.5–10.8                              | 10.1      | 11.2–12.0                           | 11.6      |
| Interorbital width             | 5.2–5.6                               | 5.4       | 5.6–5.6                             | 5.6       |
| Pectoral-fin length            | 27.4–36.0                             | 32.5      | 38.4–39.2                           | 38.8      |
| Pelvic-fin length              | 21.1–26.9                             | 24.4      | 22.4–26.4                           | 24.4      |

occur scattered over dorsal surface of entire head and otherwise pale dorsal surface of snout. Anterior tip of upper and lower jaws dark brown; upper jaw pigment extending as a broad stripe to anterior border eye. Brown chromatophores ventral to eye sometimes organized into one or two short vertical bars. Opercle with scattered chromatophores, especially dense at junction of opercle and preopercle ventral to hyomandibular joint with opercle. Ventral surface of head pale yellow with small scattered brown chromatophores which continue posteriorly on belly to anal area.

Caudal fin with 13–14 relatively narrow dark vertical bars. Dorsal fin mostly hyaline but with a narrow dark horizontal stripe mostly on inter-radial membranes extending length of fin and about one-third to one-half height of fin above its base. Distal tips of all dorsal-fin rays dusky. About 4–6 very dark spots on interradian membranes proximal to elongate horizontal stripe. These spots sometimes continuous with pigment of vertical body bars, but sometimes continuous with pale area between vertical body bars. Anal fin hyaline except for dark blotch or stripe extending from third anal-fin ray about one-third distally along fin's length to posteriormost ray near its base. Anterior anal-fin ray dark at its base. Pelvic fins hyaline except for a dark blotch near basal one-third of fin rays. Pectoral fin hyaline but with scattered small dark chromatophores.

Color in life unknown.

*Etymology*.—This fish is named for Jacques Géry whose enthusiasm for



the study of characoid fishes of South America has been especially expressed in his publications on members of the Characidiinae.

*Relationships.*—*Elachocharax pulcher*, *E. geryi*, and *G. junki* are the only members of the Characidiinae to have 17 or more dorsal-fin rays. Characters shared by *E. pulcher* and *E. geryi* in addition to the large number of dorsal-fin rays and the several other characters discussed above under the generic diagnosis, include the following, a similar color pattern of alternating dark and pale vertical bars over the body and a closely similar pattern of dark and light pigment on the dorsal fin and head (compare Figs. 1–4 with 9–10). Tables 1 and 3 indicate a close similarity in morphometrics between *E. pulcher* and *E. geryi*. Furthermore, except for the counts mentioned below these two species have scale counts such as lateral line and lateral series counts and fin-ray counts closely similar or the same.

Differences between these two species have been outlined above under the species diagnoses and notably include the presence of anterior tricuspid teeth in the premaxillary and outer row of dentary in *E. pulcher* (conic in *E. geryi*), 12 scale rows around the caudal peduncle in *E. pulcher* (14 in *E. geryi*), body with 7–8 vertical dark bars in *E. pulcher* (10 or 11 in *E. geryi*), caudal fin with one or two narrow vertical bars at its base in *E. pulcher* (13 or 14 over entire fin in *E. geryi*), and anal and pelvic fins with two prominent dark marks in *E. pulcher* (one in *E. geryi*). An adipose fin is present in *E. pulcher*, absent in *E. geryi*.

Tooth counts tend to be higher in *E. pulcher*. For example *E. pulcher* has 14–24 teeth in the inner dentary row whereas *E. geryi* has 13–16 teeth in a range of specimens of similar standard length. The premaxillary of *E. pulcher* also tends to have one or two more teeth than that of *E. geryi*. In the jaws of these fishes the larger specimens usually have more teeth than smaller specimens. The ectopterygoid teeth in *E. pulcher* range from 7–10 and only 3–5 in *E. geryi*. The total number of dorsal-fin rays in *E. geryi* appears to be somewhat higher, 20–22,  $\bar{x} = 21.3$ , whereas in *E. pulcher* it is 17–20,  $\bar{x} = 18.5$ .

#### Resumo

*Elachocharax geryi*, uma nova espécie de characideo da subfamília Characidiinae é descrita do Lago Paricatuba (60°30'W, 3°7'S), Rio Negro, Estado do Amazonas, Brasil e do Rio Vichada, Caño Muco, Estado de Vichada, Colombia. A nova espécie se aproxima bastante de *Elachocharax pulcher* Myers (1927) e as semelhanças e diferenças entre ambas são discutidas. *E. pulcher* é redescrita com base em abundante material coletado em várias localidades do Rio Amazonas, Rio Solimões, Rio Negro e parte superior do Rio Orinoco. Esta espécie era conhecida apenas pelos ex-

emplares-tipo provenientes de uma localidade situada próximo à Caicara (60°10'W, 7°39'N), na Bacia do Rio Orinoco, Venezuela.

São feitas também comparações entre *Elachocharax pulcher* e quatro parátipos da espécie nominal *Elachocharax georgiae* Gery (1965). Ficou provado que *Elachocharax georgiae* é um sinônimo de *E. pulcher*.

O gênero *Elachocharax* é redefinido com base nas descrições de *E. pulcher* e *E. geryi* e para sua pronta identificação pode ser caracterizado como um membro da subfamília Characidiinae que possui 17–22 raios na nadadeira dorsal e uma fontanela craniana posterior limitada pelas partes posteriores dos ossos frontais, partes marginais medianas dos estreitos ossos parietais e pelo supraoccipital. Sugere-se ainda que o gênero nominal *Geisleria* Gery (1971) provavelmente seja sinônimo de *Elachocharax* que então seria representado por três espécies. Como os autores não puderam examinar exemplares de *Geisleria*, a inclusão definitiva deste gênero como sinônimo de *Elachocharax* dependerá de estudos posteriores.

*Elachocharax pulcher*, *E. geryi* e *Geisleria junki* Gery (1971) são comparadas e consideradas muito mais relacionadas entre si do que a quaisquer outros representantes da subordem Characoidei. A semelhança de caracteres morfométricos (tabelas 1 e 2), padrão de colorido (presença de barras escuras e claras no corpo), colorido da nadadeira dorsal (presença de listas basais escuras contínuas com as barras do corpo e uma lista horizontal mais estreita acima e distal às listas basais escuras), indicam que *Elachocharax pulcher* e *E. geryi* são intimamente relacionadas. Além disso, estas duas espécies apresentam muitos caracteres merísticos semelhantes. Elas diferem basicamente porque *E. pulcher* possui nadadeira adiposa (ausente em *E. geryi*), 7 a 8 barras verticais escuras e largas no corpo (10 a 11 barras verticais escuras e estreitas em *E. geryi*), uma ou duas barras verticais estreitas restritas à base de nadadeira caudal (13 ou 14 barras estreitas dispostas por toda a nadadeira caudal em *E. geryi*) e duas manchas escuras grandes e conspícuas nas nadadeiras pélvicas e anal (apenas uma mancha nas pélvicas e anal de *E. geryi*). As contagens de dentes tendem a ser mais elevadas em *E. pulcher*, aparecendo, por exemplo, 14 a 24 (um pouco mais nos exemplares maiores) dentes na série interna do osso deantário (13 a 16 em *E. geryi* e a nadadeira dorsal tende a apresentar um número menor de raios em *E. pulcher* (17–20,  $\bar{x}$  = 18,5) do que em *E. geryi* (20–22,  $\bar{x}$  = 21,3).

*Elachocharax geryi* e *E. pulcher* são em conjunto comparadas com *Geisleria junki* que, aparentemente, não apresenta não apenas a fontanela craniana que distingue (atualmente) *Geisleria* de *Elachocharax*, mas também seguramente não possui o padrão de colorido caracterizado pela presença de barras verticais no corpo. Além disso, *G. junki* parece ter a nadadeira anal situada bem mais à frente, sua origem estando anteriormente bem distante da parte final da nadadeira dorsal. Em ambas as espécies de

*Elachocharax*, a origem da nadadeira anal se situa verticalmente abaixo ou é posterior à parte final da nadadeira dorsal.

A história das relações hipotéticas dos Characidiinae é revista sumariamente. Elachocharacinae e Geisleriinae não são aceitas como subfamílias distintas, embora seja sugerido que Elachocharacina possa vir a se constituir em um nome aceitável para uma tribo formada por um grupo de espécies de Characidiinae de tamanho reduzido. Isto poderia ocorrer se estudos posteriores mostrarem, como melhor hipótese, que os membros da subfamília Characidiinae de tamanho reduzido atualmente incluídos nos gêneros *Klausewitzia*, *Jobertina* (que também engloba espécies de tamanho maior), *Elachocharax* e *Geisleria* são muito mais relacionados entre si do que a quaisquer outros membros de Characidiinae.

É observado ainda que, embora as relações dos Characidiinae com outros Characoidei não estejam esclarecidas, é possível afirmar que o grupo certamente não se relaciona com as famílias Lebiasinidae e Erythrinidae.

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